THE

AMERICAN PRACTITIONER:

A MONTHLY JOURNAL OF

MEDICINE AND SURGERY.

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THE AMERICAN PRACTITIONER.

OCTOBER, 1872.

Certainly it is excellent discipline for an author to feel that he must say all he has to say in the fewest possible words, or his reader is sure to skip them; and in the plainest possible words, or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want downright facts at present more than anything else.—RUSKIN.

Original Communications.

ELECTRICITY AS A MEANS OF RESUSCITATION.*

BY ALLAN M'LANE HAMILTON, M. D.

Physician in charge of the New York State Hospital for Diseases of the Nervous System.

It is my purpose this evening simply to give the results of a few experiments lately made by me upon animals, with the idea of demonstrating the efficacy of electricity as a resuscitating agent in cases of suspended animation. The ideas that have hitherto been entertained by most of the medical profession in regard to the employment of this force have been most vague. Every text-book has mentioned among its list of restorative agents electricity, but in such an indefinite, casual way, without even giving cases, that it has never been employed either judiciously or with any confidence.

Electricity has been such a cure-all in the hands of empirics that it may be supposed, before I begin my remarks, to be an unfailing, invariable restorative; but I do not claim any such reputation for it. It has failed in many cases; but

* Read before the New York Library and Journal Association, June 14, 1872.

I predict that it will one day prove to be the *first* agent for the purpose of restoring suspended animation. Heretofore the bulky apparatus required was never to be had in an emergency. At present every practitioner can have a faradic instrument of sufficient power that may be carried in his coat-pocket.

My attention was first called to some authenticated cases of restoration by my friend, Dr. William A. Hammond, and some experiments performed upon animals by Dr. Grondut, of Paris, reported in *Magendie's Journal de Physiologie* for the year 1821. This latter gentleman reported many conclusive trials with the voltaic pile, a rude and cumbersome apparatus; but even with this he convinces the reader that galvanism has a most powerful influence.

In the medical literature of the last century very little has been written, and that very little is exceedingly unreliable. The French and German writers of the last twenty years have given us the most information. The avidity with which some of the more enthusiastic have seized upon the bodies of executed criminals is very amusing. The newspapers have thrived upon this food; but even electricity will not restore an individual with a broken neck. It has virtue, however, and will restore victims of asphyxia of whatever form, provided that the heart has not too long ceased to beat. M. Grondut, in the paper referred to, cites cases where the animal had even been apparently dead a quarter of an hour before the current was applied, and after the uninterrupted use of the battery for half an hour the animal was restored. He cites another case, where the animal had been immersed in water for a period longer than this, and when taken out dead life was entirely restored after an uninterrupted use of the battery for three quarters of an hour.

We may name the conditions where electricity is indicated, as asphyxia, coma, and syncope. Dunglison defines asphyxia as "a state depending on an insufficient aeration of the carbonized or venous blood. Owing to the supply of air being

cut off, the unchanged venous blood of the pulmonary artery passes into the minute radicles of the pulmonary veins; but their peculiar excitability requiring arterial blood to excite them more or less, stagnation takes place in the pulmonary capillaries, and death occurs chiefly from this cause and from the want of arterial blood, and not owing to venous blood being distributed through the system and poisoning it, as was the idea of Bichat."

The causes of asphyxia may be submersion in a medium unfit for respiration, or drowning; pressure of the glottis, or strangulation; paralysis from traumatic causes of the muscles of respiration; and suffocation when air is denied the lungs, either by stoppage of the air-passages or the inspiration of poisonous gases; or finally the asphyxia of new-born infants, or *asphyxia neonatorum.*

The different ways productive of asphyxia, recited before, all cause the same symptoms to be manifested, and a general paralysis of the system ensues. The lungs are powerless to do their work, as they are filled with carbonic-acid gas, which can not escape. Electricity exerts its restorative power by exciting nervous force. This may act secondarily by stimulating the paralyzed nerves and by emptying the minute blood-vessels, or it may act directly upon the heart and the vaso-motor nerves through the sympathetic, or immediately upon the nerves supplying the special muscles concerned in respiration (the phrenic and intercostals). It may act on the pneumogastric. It may expel the blood from the minute vessels of the cord, or diminish a congested condition of the cerebrum or cerebellum.

Its action on the heart is remarkable. A strong galvanic current passed through the pneumogastric will produce a marked state of asphyxia. The blood in the carotids is blackened, and the mucous membrane of the mouth becomes congested. A faradic current will produce, on the contrary, a stimulation of respiratory movements.

Experiments* made by Myer demonstrate the fact that after the death of an animal, when the heart no longer beats, if a strong induced current is transmitted into this organ, its rhythmical contractions reäppear. The contractions are much more manifest in the right portion of the heart than in the left, as generally after death the left ventricle is firmly contracted, and does not reach the electric irritation, while the right ventricle in this condition is almost always filled with blood, and contracts powerfully under the influence of the electrical current. In animals that have been killed by chloroform the left ventricle sometimes continues to pulsate, though faintly, after the action of the right ventricle has ceased, in consequence of excessive expansion by means of the black blood. If in such cases we electrize the left ventricle, its pulsations begin again and the expansion lessens. The insensibility following the inhalation of carbonic-acid gas, as well as other noxious vapors, and other forms of asphyxia, is finally produced by coma. The use of galvanism should therefore be directed to the cerebral as well as pulmonary difficulty.

There are certain conditions separate from asphyxia, resulting in death. These are strictly cerebral as far as the primary lesion is concerned, and may be enumerated as concussion, congestion of the brain, and narcotic poisoning. Syncope is a morbid condition, in which electricity, as I have stated, may be advantageously used. In sunstroke the galvanic current has enabled me to save at least one patient, and I do not doubt its power to do good in others.

In the consideration of poisoning by both narcotics and sedatives we must realize the fact that narcotics produce death, beginning by coma and finally ending in asphyxia, and direct our treatment to both centers, the brain and respiratory organs; and that sedatives produce death by syncope, and here direct our energies to the stimulation of the heart. In

* Myer's Medical Electricity, translated by Dr. Wm. A. Hammond.

concussion it is our idea to diminish the disturbance of the brain and reëstablish the normal circulation.

In the production of respiratory movement it has been found by Mons. Grondut that the excitation of the diaphragm through the phrenic nerve is the most desirable way. To electrize this nerve we find the anterior border of the scalenus-anticus muscle by pulling the skin inward, with two fingers placed on the outer border of the sterno-cleido-mastoideus. Without discontinuing the action of the fingers, we separate them sufficiently to introduce between them a narrow moist conductor, which then presses directly on the phrenic nerve. After we have done the same thing to the other side we allow the induction apparatus to work rapidly and powerfully. The two phrenici in this way, equally excited, immediately cause strong heavings of the chest, with a rushing of air into the lungs. We may at the same time electrize the intercostals and other muscles used in respiration.

I am confident that the occasional deaths that have recently occurred in this city from the use of chloroform and nitrous-oxide gas could have been prevented had electricity been properly used. It is necessary to understand the process of fatal chloroform narcosis before we can fully consider the treatment. I beg leave to make the following quotation from Anstie's most valuable work on "Narcotics and Stimulants:"* "When the impregnation of the blood takes place with moderate rapidity the sympathetic system is the *ultimum moriens*, and death begins at the lungs. When, on the contrary, the circulation becomes very rapidly charged with a large proportion of chloroform the narcotic effect may fall with such force upon the sympathetic nerves as to extinguish their vitality at once. Of course it is almost impossible to attempt resuscitation in the latter case, as a complete paralysis of the heart invariably ensues. In the former we must apply the current to the phrenic, as we do in the other forms of asphyxia."

* Stimulants and Narcotics, page 328.

Electricity has been suggested as a remedy in cases where persons have been struck by lightning, in a homeopathic way, I suppose, as this would be "taking the hair of the dog that bit you." I can see no indication for its employment here, and I never have been so fortunate as to have a chance to use it. Dr. S. Foster, of New York, mentions a case where his efforts restored a patient in a short time.

I will now detail some experiments I have lately made, with the view not only of testing those of Magendie, but of seeing how much more efficient our nerve instruments were than those in use in the early part of this century.

The animals chosen for my experiments were dogs and cats. I chose the latter not because their reputation of having nine lives would entitle them to better chances of restoration than their mortal enemies, the dogs, but because they were smaller, more easily procurable, and better suited for the influence of galvanism.

I. My first experiment was to test the power of this agent in asphyxia by submersion or drowning. I took an active male cat, and after holding his head under water for a minute and a half removed him insensible and apparently dead. The heart had ceased to beat and respiration had stopped. I quickly applied the two poles of a small faradic battery, one over the edge of the diaphragm and the other over the medulla. Many convulsive jerks followed the transmission of the current, which was quite strong. In ten minutes several spasmodic movements of the thorax were visible, with an increase in strength and presently a regularity of recurrence in respiration, which finally became normal after about seventeen minutes of application. The cat, however, fell a martyr to the second experiment, when, being kept under water three minutes, the full strength of the battery, applied for a long time, failed to restore him.

II. A cat was held with its head under water for two minutes, and then taken out completely insensible. It was

allowed to lie for five minutes perfectly motionless and apparently dead, then the strongest induced current was applied, one pole to the inside of the ear, the other to the inferior border of the ribs. After six minutes respiratory movements were apparent, and after twenty-five minutes greater regularity was observed, and finally the cat became entirely conscious and walked away. Many other experiments were tried, nearly all of them giving satisfactory results.

III. Anxious to observe the effects of electricity upon animals suffocated by carbureted hydrogen or illuminating gas, I next tested this agent by procuring a close, air-tight box, with an opening just large enough to admit a small India-rubber tube. A cat was placed in this poison, and, after several violent efforts succumbed, and was taken out limp and almost pulseless. Galvanization restored her, but she died the next day. Another cat, that had been kept for several minutes in this gas, could not be restored even after application of the galvanic and induced currents. My next experiments were with anæsthetics.

IV. A small cat was secured, and two and a half ounces of ether were given. The sponge was kept over her head till the heart had ceased to beat. I could not even detect any of those forcible systolic movements that the heart makes in death by asphyxia. The respiratory movements had ceased, and not a spark of life remained so far as I could judge. She was allowed to lie one minute, and then, after wetting the hair over the ensiform cartilage and the lower border of the ribs, and shaving the neck, I applied the full force of the secondary current. Of course the body was convulsed most violently. After applying the current for eight minutes signs of returning consciousness were observed, respiratory movements returned, and she was restored.

V. To a small dog was given one ounce of chloroform. In a very short time the animal was pronounced dead. A passage of the current through the phrenic nerve reëstab-

lished respiratory movement, which became regular in ten minutes.

VI. My last experiment was made to verify the results of Mons. Grondut already mentioned; but, though three cats were sacrificed, my success was not so brilliant. I give that which is the most satisfactory, however. I held a cat by the hind legs, and fairly dealt several very hard blows upon the occiput with the edge of my right hand. The fourth blow produced decided coma, and after several convulsions death appeared positive. The galvanic current, generated by forty cells, was applied, by means of the usual sponge electrodes, through the eyes (as recommended by the authority I have quoted so often) and through the nervous centers, one pole applied to the inside of the ear, the other to the anus. A steady current was applied for ten minutes at intervals, and the nucha was shaved and a pole changed to this place. At the end of ten minutes a feeble return of consciousness and a slight rolling of the eyes were noticed. The nostrils dilated and breathing was observed. The action of the current was kept up, though diminished in power, and the violent muscular contractions always produced by the current were moderated. In twenty minutes I had the pleasure of seeing complete restoration. Meningitis supervened a few days after, and the cat died. A day after the operation I examined the eyes, and detected some dark spots under the retina, which I supposed were extravasations of blood produced by the violence of my blows.

The following experiments by Mons. Grondut are certainly wonderful, but we must accept them with a slight doubt. Mons. Grondut prefaces his experiments by saying:

"During my sojourn at Akramia, in September, 1819, a man, thirty years of age, of robust constitution, had fallen from his horse, and was found dead there soon after his fall, a short distance from the house he had left. He was motionless, without pulse or respiration. He had a contusion on his brow, without any apparent

fracture of the cranium. The face and extremities were cold. The body still presented a degree of warmth barely less than in health. I opened a vein without any result. I drew several ounces of blood by means of scarification back of the ears, and rubbed his entire body; but these means were useless. The only sign of life I could discover was a slight return of sensibility of the pupil. Nothing could call this man to life. This inefficacy of remedies that I had employed made me regret greatly that I had not at my disposal a voltaic apparatus, thinking that the electric fluid could have reanimated this man, and in other cases where life had been simply suspended by concussion of the brain. I then proposed to return to Paris, where several experiments upon animals had demonstrated its usefulness in analogous cases. With this idea I have made during the last few months the two proofs that I will give.

"I. Having seized by the hind legs a young female rabbit, I gave her several strokes on the occiput with the inner side of my hand. The animal uttered a cry, made convulsive movements, fell in a lethargy, and did not give any other signs of life than an occasional breath and a convulsion. In this state, so near death, I passed with the aid of a voltaic pile of thirty plates an electric current through the vertebræ and the different points of the vertebral column. It resulted in sudden contractions, which ceased with the action of the pile. Stopping it, the animal fell again into a state of death. The eyes were motionless and upturned. After having vainly tried for several hours the most intense effects of the process, I passed the galvanic current through the nose, the eyes, and the auditory canal, a part and afterward the entire length of the spine. She soon showed movements of returning consciousness, arose and made irregular movements of progression. It consumed half an hour to bring her to life. Three hours later she sat up and bore herself very well. The right eye, which had principally been acted upon, remained congested. Three weeks after the left eye was restored.

"II. I took by the lumbar region a female rabbit much stronger than the first, and hit her several severe blows on the occiput, which also put her in a state of apparent death. She did not show as many of the convulsive movements as the first. As to the violence of the first shocks and those which followed, the peasant who had brought me the rabbit was sure that it was impossible to revive her, he having been accustomed to see rabbits which were killed for market succumb to less violent blows.

"It was nine o'clock in the morning. The electric current was used a quarter of an hour in the manner described in the last experiment, and produced but few convulsive movements. These were slight, and every movement becoming more feeble. I despaired of the success of this experiment, and changed the place to the great trunks which I had exposed, thinking that the skin might be an obstacle to the free passage of the electric fluid through the organs. I obtained in the space of a few minutes a vesication of the entire length of the vertebral column by means of ammoniacal pomade. The animal did not manifest the least sensibiltty during the action of this application, but as soon as the electric current was established through the eyes, the nose, the auditory canal, and the skin, these movements began and increased. Soon the animal sat up on her fore legs; the hind legs remained paralyzed. At the end of an hour the ears were erected and respiration became slower. I left the rabbit in this state. In the evening she took some nourishment. The hind quarter remained as if paralyzed several days, probably because in the first part of the experiment I had struck the lumbar region. The right eye, at first inflamed, became deprived of vision, and eventually atrophied. The animal appeared well eight days afterward. These two females have since both brought forth young."

A case of opium poisoning is reported by Dr. S. S. Page in the American Journal of Medical Science for April, 1843, page 301, where the patient took an enormous dose of powdered opium in mistake for cubebs. The stomach was evacuated and revulsive means employed, but the patient remained completely insensible. An electro-magnetic apparatus was used, one pole being placed over the heart, the other over a corresponding point on the right side. The patient opened his eyes, groaned, and moved his arms. After the fourth shock he moved his arms and did not become insensible again.

A case is related by Mr. Corfe in the Lancet, January 27, 1844. A man had taken an ounce and a half of laudanum, and appeared to be quite dead. After the stomach-pump and external irritants had been used in vain, recourse was had to the leyden jar. The patient recovered.

The other miscellaneous cases are numberless. In 1809 Mr. Babbington restored a patient asphyxiated with charcoal fumes by passing a charge through the chest. Mr. Farmer,* of Boston, and Friedberg† restored persons who had been apparently killed by chloroform.

At a meeting of the Manchester Medical Society Dr. Hardie recounted two cases of chloroform asphyxia in which, after the failure of ordinary means of resuscitation, such as cold affusions, artificial respiration, galvanism of the chest, etc., the recovery was effected by Ziemmsen's method of pressing both poles of the battery deeply in at the root of the neck, one over each phrenic nerve. This caused a gasping, inspiratory movement, when the battery was temporarily removed and the chest walls compressed; and so on alternately until restoration was complete.‡

Friedberg's case§ of asphyxia by chloroform is reported as follows: "A patient, four years old, was put under the influence of chloroform for the removal of an encysted tumor of the left lower eyelid, when suddenly a short, rattling inspiration ensued, after which breathing ceased. For several minutes the patient was rubbed; artificial respiration was also tried, but was ineffectual. Friedberg then faradized the diaphragm by placing one of the electrodes of Du Bois Reymond upon the phrenic nerve, and applying the other to the lateral wall of the thorax in the seventh intercostal space, pressing it deeply against the diaphragm. This faradization was made alternately on the right and left side, the circuit remaining closed each time for the duration of a deep inspiration. After the current had thus been applied and interrupted ten times the first weak but plainly spontaneous inspiration occurred,

* Quoted by Periera.

† *Die Electricität in der Medicin, Dritte auflage*, 1868, pp. 174–197.

‡ Since writing this article I learn that Dr. Burral, of this city, quite recently restored a patient who had apparently succumbed to chloroform during an operation. The faradic current restored the patient in a few minutes.

§ Virchow's Archiv., 1859. Vol. XVI., page 527.

which was soon followed by a second and third, the face reddening and the radial pulse becoming perceptible. After persistence in this treatment the patient fully recovered in twenty minutes, and the operation went on.

As to the application of the current there is great dispute. Duchenne insists that it should be transmitted through the phrenic nerve, and my experiments have verified this. I found that the application of one of the poles to the base of the skull was also a powerful means of procuring the effect. This spot must be a still better place in the human subject. In experiments upon animals the eye-ball or the delicate cutaneous portion of the ear conducts the current much more readily than any other part of the body.

Ziemssen's method * is a modification of that of Duchenne. The conductors are placed at the root of the neck, so that the current is passed not only through the phrenici but through the other nerves supplying the respiratory muscles, from the brachial and cervical plexus. Each irritation of these nerves is made to last twenty seconds, about the time of a quiet, deep inspiration. At the same time an assistant presses on the abdominal walls from below upward. After a number of irritations a pause is made to observe whether spontaneous respiration begins or not. If no effects follow, a stronger current is advised, or even the galvanic current.

As to the variety of electricity, I found that the induced current and the interrupted primary current, when shocks are produced, are the most efficacious. This rapid interruption seems to stimulate the nerve more powerfully. This is a decided advantage, as the instruments for the production of the induced current are the most compact and easily transportable. In the asphyxia of new-born children, or *asphyxia neonatorum*, electricity has occasionally been called in; but as it has been more used by midwives, or German *hebammes*, than by medical men, the literature of electro-therapeutics

* Hammond's Translation of Myer, page 430.

contains very little information in regard to the subject. I learn that Dr. Alexander Murray, of New York, has saved three lives of asphyxiated children by the method I will presently recite. He tried the faradization of the phrenic nerve in one case, and this child instantly died. The great idea in treatment is to pass the current along the course of nerves and their ramification, the object being to restore the circulation of the blood and respiration by transmitting the current through the pneumogastric. The child should be placed in a firm position, with the head elevated so as to clear the mouth and fauces of mucus. The body should be kept warm (about 98° F.), and the strong faradic current used, one pole applied to the nipple, the other over the seventh intercostal space, moving the latter in a circular manner toward and over the precordial region. The electrodes should be sponge-covered and well moistened.

The results arrived at from my own practice and experiments are the following:

1. That it is useless to expect good results if five minutes have elapsed since life appeared extinct.

2. That the current should be applied faithfully and *steadily*, one pole being placed on the ensiform cartilage, the other on the base of the skull or over the tracks of the great nerves of the neck.

3. That the faradic and interrupted galvanic currents are the best.

4. That the current should be applied some time after respiratory movements have become regular.

The necessity of having a battery within reach is apparent. Every practitioner should have a small one for emergencies. They should be kept at each life-saving station on the coast, ready charged, with directions for immediate use. If this were done I doubt if the percentage of deaths would be so great as it now is. Artificial respiration by the production of muscular movements is a very valuable means of restoration;

but a force that acts directly upon the nerves, supplying the muscles of respiration, is by far the surest and best.

NEW YORK.

A CASE OF CHRONIC STRUMOUS ARTHRITIS.

BY J. OSGOOD STILLSON, A. B.

Some of the readers of the American Practitioner, who attended the medical lectures at the University of Louisville last winter, will remember a case belonging to those troublesome affections of the knee-joint called scrofulous, which was relieved by Prof. D. W. Yandell, the treatment pursued being mainly rest, with perfect immobility of the joint. After my return home, in February, I was called to a case so much like that in its nature and termination that I have concluded to give a few notes of it, showing the progress of the treatment which I pursued.

A. S., a boy fifteen years of age, had been troubled for about three years with an enlargement of the knee-joint, resulting from some morbid condition of the condyles of the femur. He did not remember ever having hurt it in any way; but he had noticed the joint gradually enlarging, sometimes giving him pain, but causing him more inconvenience by the lack of mobility, the joint having become almost useless. Several physicians had been consulted, and treatment of different kinds had been followed for the past year, until it was decided that the leg had better be amputated. At this time I was called to see the patient. I concluded that it was strumous in its origin and character, from the fact that there seemed to have been no definite starting-point of the disease, the trouble having slowly supervened upon some very slight injury or commenced with subacute synovitis. My diagnosis

was confirmed in my own mind when I learned that a sister of the boy had died, a few years before, with an affection of the tibia, in which the bone had softened, the osseous tissue had undergone change, and the cells of the cancellated portion had become filled with a bloody and fatty serous fluid.

The date of my first visit to the boy was the 13th of February, at which time the knee-joint was greatly swollen, œdematous, and painful, with but very slight motion. Near the tendinous insertion of the rectus, into the upper part of the patella, and a little to the outer aspect of the leg, there appeared a circumscribed redness, about two and a half inches in diameter, which threatened suppuration, but I made no incision into it at the time, and had no occasion to do so afterward. The circumference of the joint at the largest place was twenty-one inches, the circumference of the other knee being fifteen inches. I applied a starch bandage from the ankle to the middle third of the thigh, and gave quinine and iron, for the patient was anæmic and much debilitated.

My second visit was on the 27th of February. On removing the bandage, I found the joint to measure only nineteen and a half inches. I replaced the bandage, making it as tight as I could, and continued the quinine and iron as before.

March 14th—The œdema greatly reduced; circumscribed redness not so well marked, and of a less inflammatory character. No motion of the joint attempted, not even passive; size, eighteen inches; bandage reäpplied.

April 4th—Circumscribed redness gone; little or no pain; *passive* motion (flexion) possible in a slight degree; size, seventeen and a quarter inches. At this time both the natural feeling and sensibility of the limb began to return. Before this they had both been wanting. There was considerable numbness. He could pierce the skin over the joint with a pin without pain. Bandage reäpplied.

April 19th—Redness none; no pain; skin loose about the joint; flexion and extension sufficient for slow walking with-

out crutches; size, sixteen and three fourth inches. The inner condyle of the femur up to this time was greatly thickened, presenting the appearance of a hard node. I reäpplied the starch bandage again, and left it until April 27th, when, hoping to remove the morbid growth on the condyle, the treatment was changed from iron to the iodide of potassium and bromide of ammonium. The bandage was left on until May 9th, when it was removed entirely. The patient could then walk very well without limping. The prescription above mentioned produced a slight iodism, but was continued after a few days' intermission. His general health was very good. The condyle, though still large, seemed to be a little smaller than when the potash was first given. The last measurement of the joint gave sixteen and a half inches. Up to the present time there has been no sign of a return of the swelling or the pain. The patient has good use of the leg, and the exostosis, though not entirely gone, is reduced in size.

BEDFORD, IND.

ERGOT AND POSITION IN SECONDARY HEMORRHAGE FOLLOWING A PISTOL WOUND OF THE HAND.

BY WILLIAM H. WATHEN, M. D.

A delicate boy, twelve years old, accidently discharged a small-sized cartridge pistol. The ball entered near the center of the palm of the right hand, and passed out just anterior to the styloid process of the ulna, fracturing in its course the third metacarpal bone. The shock and hemorrhage were inconsiderable. Water-dressings were applied by my friend, Dr. W. B. Doherty, who first saw the case, and on the 5th of July, four days after the accident, the patient was sent to

St. Joseph's Infirmary, and came under my care. In consequence of considerable swelling of the hand carbolized linseed poultices were substituted for the water dressing; and the patient, having sharp fever, with a temperature of 102°, was put on quinine. The fever gradually diminished, the local swelling abated, the wound looked healthy, suppuration was moderate, and everything promised well until in the afternoon of the 15th I was called in haste on account of a considerable hemorrhage which had occurred from the palmar opening of the wound. The bleeding having ceased before my arrival, I simply raised the hand and directed compresses with cold water. In two hours after the hemorrhage returned, but again ceased before I reached the patient. I now filled the wound and palm of the hand with cotton, and applied a roller bandage from the fingers to the elbow. Slight hemorrhage being noticed about midnight, I removed the dressings, and after saturating the cotton with the persulphate of iron reäpplied them. The following morning, at six o'clock, the pain in the hand was so severe as to oblige the removal of the dressings. As soon as the compresses had been fairly gotten off a jet of arterial blood spouted out from the palmar opening to the distance of two feet, but was at once controlled by compressing the brachial artery. I again plugged the wound with the cotton and persulphate, and applied the roller. The pulse at this time was 140 and feeble, and the patient greatly exhausted. I ordered stimulants and food.

At 10 A. M. Dr. Cowling saw the patient with me, when he was found extremely prostrated and unable to retain either brandy or wine. He was now given ten drops of laudanum, and soon after some lime-water and milk, with the effect of reviving him. Hemorrhage having been going on slowly, the dressings were again removed, the wound filled with the persulphate of iron, the parts covered with compresses of cotton containing the persulphate, and the whole thoroughly covered with collodion, the fingers carefully bandaged, and the roller

applied up the entire arm, which, after being considerably elevated, was placed in a wadded box. Directed five drops of laudanum every three hours; milk and lime-water every hour. 5 P. M.: temperature 104°; pulse 140; patient had slept some, and was easy.

At 8 A. M. next day temperature 100°; pulse 115; slept well and still comfortable; ate a fair breakfast; considerable purulent discharge from dorsal wound, which being somewhat offensive a carbolized wash was applied.

At 7 P. M. next day a very large loss of blood occurred, but this time from the dorsal opening. The collodion and compresses over the palm were dry and intact. The patient making complaint of the roller, this was removed.

Dr. D. W. Yandell, being added to the consultation, advised that the fluid extract of ergot be given, in doses of from thirty to sixty drops, every three hours, and the arm be held vertically over the head by strips of adhesive plaster applied along the entire arm and reaching beyond the tips of the fingers, to be secured to a cord stretched across the bedposts. Pulse 135, very feeble; temperature 100°; patient extremely exhausted. At 11 P. M. the patient was cheerful, expressed great delight at the comfort afforded by removal of the roller and the new position of his arm. Pulse 120; temperature 99.5°; had taken food and medicine regularly.

From this time no further hemorrhage occurred. The ergot was continued in gradually-diminished doses for three days, at which time it was changed for the muriated tincture of iron and quinine, and the arm lowered and placed on a pillow, the hand slightly raised. Pus was now running freely from the dorsal wound, and the entire hand and wrist much swollen. Two days after, the swelling having increased, the compresses and collodion were entirely removed, when a considerable amount of offensive matter welled out from both the openings. I directed carbolized poultices and favored drainage by lowering the hand. In two weeks the wound

had healed, leaving the patient in good use of the hand and all the fingers except the fourth, which was stiff.

LOUISVILLE.

PHTHIRIASIS AND ITS TREATMENT.

BY W. T. CARTER, M. D.

If it were possible to disassociate our instinctive antipathy to lice from the study of their habits and the various diseases with which they are intimately connected, a research among the several species that have been described would be of no little interest. It can not be denied, however, that lousiness is frequently met with in men, women, and children, and that some physicians are confessedly ignorant of the most efficient means of treating the malady. It is one which may be encountered every day in the southern suburbs of this city. This remark applies particularly to the negroes and the lower class of white people, who are densely crowded together in the vicinity of the brick-yards. Every house affords shelter to as many families as it has rooms; consequently great facilities for the diffusion of migratory parasites are afforded. In these localities I have met with many opportunities to test the efficacy of the various means recommended to destroy lice.

In this cursory review I shall briefly call attention to the three varieties of the insect that are most frequently met with: *pediculus pubis, pediculus capitis,* and *pediculus corporis.* The names imply the portions of the body inhabited by each species; and although living in close proximity, one species does not invade the territory of another. This rule is without an exception; for the crab-louse, in making its way to the

chin and axilla, selects always the two regions covered with hair similar to that upon the pubes.

The crab-louse (pediculus pubis) has a broad, scutiform body, with no apparent division between the abdominal and thoracic cavities. Upon each side are situated several cheliform legs, which enable it to adhere so firmly to the stem of the hair that it is impossible to remove it without fracturing its claws or pulling out the hair. They very soon, if allowed to accumulate, induce a local prurigo of the pubes and scrotum. Their ova or nits are deposited in a gelatinous secretion, which sticks, upon drying, very closely to the base of the hair.

The body of the head-louse (pediculus capitis) presents seven or eight depressions or fissures, which divide the abdomen and thorax into as many segments. The excrement of the vermin, together with dandruff and the exudation from the wounds made by their bites, often give rise to an eczematous eruption of the head, which mats the hair and offers protection to the myriads of nits deposited by the prolific females.

The body-louse (pediculus corporis) is somewhat larger than the two varieties just described. Its body is oblong, the posterior portion the broadest; has serrated margins, and is covered with a soft, hairy pubescence of a whitish appearance. It has three short, jointed legs situated upon each side of its constricted thorax, which are also covered with down. Pustular and pruriginous affections of the body are often caused by the irritation of the lice and the scratching of the party afflicted. Wherever the clothing is gathered into folds, and especially where it is drawn tightly around the body, they find their favorite hiding-places. Their eggs are deposited in the seams of the garments worn next the skin. Cases have been reported in which small tuberosities upon the body gave exit, when opened, to large quantities of nits and lice; others in which small, irritable sinuses in the skin emitted lice of various shapes and sizes.

The destruction of the parasites is best accomplished by the use of the following solution:

℞. Corrosive sublimate, . . gr. xij;
Alcohol, ... ʒ iv;
Oil of bergamot, ... ♏ vj.
Mix and add water, ʒ iij ss.

This solution should be thoroughly applied to every part of the body infested, taking care that every insect is reached by it. The first application will, in the majority of cases, cause the death of every accessible louse; but it should be continued twice daily for at least one week, in order that none may escape. It will generally be found necessary, where lice have set up an eczema of the scalp, to cut the hair short, in order to expose every retreat of the insect; and even where alcohol or dilute acetic acid, as recommended by Hebra, are used to destroy the nits, I have found the cure greatly expedited if the solution of the bichloride be employed in conjunction with the above agents. When the pubis is the part affected, the solution should be briskly rubbed in upon the scrotum, perineum, pubes, and about the anus. If body-lice are present, the clothes should either be destroyed or be boiled or exposed to a temperature of 150° F. Such lesions as may remain after the destruction of the vermin are to be treated according to their character.

I do not consider it necessary to speak of any other method of treatment, since that just given is, so far as my experience goes, invariably successful. In that peculiar condition of the system, so graphically described by Dr. McCall Anderson, in which lice multiply on the body in such numbers and with such astonishing rapidity, the iodide of potassium alone, or in combination with prussic acid, given internally, has yielded the most satisfactory results.

LOUISVILLE.

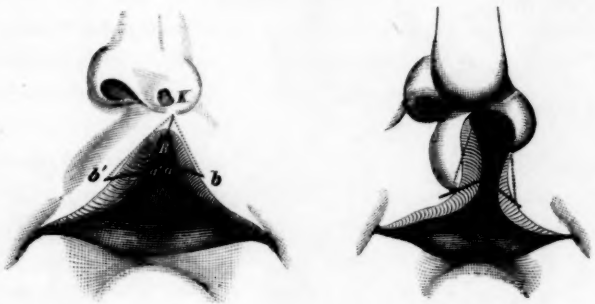
THREE CASES OF HARE-LIP.

BY DAVID W. YANDELL, M. D.

In the summer of 1870 Dr. William Stokes, jr., of Dublin, described a new method of remedying the defect of hare-lip, which he claimed possessed advantages over any other procedure. These were: 1. No subsequent curtailment of the projection at the lower extremity of the cleft is necessary; 2. The procedure is applicable to all forms and varieties of hare-lip; 3. There is no chance of portions of the soft tissues perishing from any twisting of them; 4. There can be no subsequent puckering; 5. There can be no subsequent notch; 6. The possibility of any vertical sulcus or groove in the line of the cicatrix is also prevented.

The operation may be thus described: the complete incisions, or those through the entire thickness of the lip, are indicated in the accompanying diagram by black lines; the others, or those which do not go through the entire lip, are indicated by dotted lines. The premaxillary bone is dealt with in the ordinary manner, either by pushing it back or by first removing a V-shaped piece of the vomer. In order to command the hemorrhage and dispense with the aid of the fingers of assistants, Dr. Stokes applies at each angle of the mouth one of the largest of Mr. Nunneley's artery forceps; then with curved scissors he divides all the false frena. He coincides with Mr. Collis in thinking it unnecessary to touch the true frenum, "as the parts can be brought into perfect apposition without meddling with it." Seize the edge of the cleft at its lower extremity with a double hook, draw the parts forward, in order to put them on the stretch, and with a fine narrow-bladed knife make an incision through the entire thickness of the lip, taking care, however, to stop at

about two or three lines above the red border of the lip. Then make another similar incision on the opposite side. Two *serres fines* must then be applied to the extremities of these flaps, which have the two-fold advantage of arresting any hemorrhage, however slight, that may occur, and also by their weight making the flaps hang down below the red border of the lip, thus keeping them out of the way of the operator until the time comes for uniting them by a point or



points of interrupted suture. The two points *a* and *a'* can thus be brought down below the red border of the lip, thus forming a projection, and effectually getting rid of the subsequent occurrence of a notch in this situation. The next step of the operation consists in making a vertical incision (K B) through the entire thickness of the lip, with small straight scissors at the upper angle of the cleft. This, of course, is only necessary in cases where the labial cleft does not extend into the nose. Making the partial incisions at the edge of the cleft on either side constitutes the third stage of the operation, and for these the knives that answer best are Graefe's cataract knife, a straight iridectomy knife, or Pollock's knife. These incisions are made going through fully two thirds or three fourths of the thickness of the lip from the upper point of the vertical incision K down to *b* on one side, and from K to *b'* on the other. Great care should be taken to prevent

the knife going too far and wounding the mucous membrane of the lip. The two quadrilateral flaps (K B *a b* and K B *a′ b′*) united behind by the mucous membrane of the posterior aspect of the lip, can then with great facility be turned back, and the broad raw surfaces of each brought into apposition. A tolerably strong, well-tempered spear-pointed needle should then be introduced from *b* to *b′*. In the great majority of cases one is sufficient.

FIG. 1.

A second may, however, be introduced higher up, and the raw surfaces of the quadrilateral flaps approximated by an ordinary figure-of-eight suture. But when a second needle is not deemed necessary, the edges can be approximated and held together by fine entomologist pins. For the point of suture below fastening the points *a* and *a′* the fine Chinese suture-silk can be used with great advantage.

FIG. 2.

Soon after the appearance of Dr. Stokes's article in the Dublin Quarterly Journal I had an opportunity of performing his operation on three cases, of which I here give a brief account.

The first (Figs. 1 and 2) was a stout country-girl, from Indiana, aged nineteen. The only special difficulty experienced in operating in this case arose from the very prominent and unyielding premaxillary bone, which, besides containing a small tooth, was surrounded by an excessively dense gum. After extracting the tooth I brought the projection into proper shape with a pair of strong scissors, and by the aid of strong forceps succeeded in pushing the bone back to the required line. I then proceeded with Dr. Stokes's operation. When the cut surfaces had been carefully approximated and secured by pins and sutures, I obviated traction of the wound by strips of gauze silk stretched from one cheek to the other, and held by collodion. The patient then got a full opiate and soon went to sleep. In the afternoon of the next day she had a severe chill, followed by a fever, in which the temperature rose to 105°. On inquiry I learned that she had had a malarial attack three weeks before. Quinine prevented a recurrence of the paroxysm; but I attribute the very slight notch observable on the left side of the lip to ulceration resulting from the fever (Fig. 3). The patient herself thinks the notch is exaggerated in the wood-cut. It exists

FIG. 3.

only on one side; the free border of the left side preserved its proper line. All dressings were removed at the end of seventy hours, when union was found to be perfect except at the point mentioned.

The second case (Fig. 4) was that of a boy twenty months old, in which the same difficulty, though in less degree, was experienced in reference to the central portion, and the same measures adopted to overcome it as in the first case. The

FIG. 4.

FIG. 5.

pins and sutures here were removed at the end of forty-eight hours, but the silk strips were reäpplied and continued for a few days longer. The results of the operation in this case were all that could be desired. (Fig. 5.)

In the third case, which was in the person of a child nineteen months old, also a double hare-lip, the operation, though it allowed of an admirable apposition of the parts, and gave for some days after the removal of the dressings all desired promise, was brought to a disastrous issue in consequence of an overwhelming diarrhea, which, though it did not end fatally, lowered the vital powers sufficiently to melt away the newly-formed union of the parts.

Of the several different operative procedures which I have practiced for the relief of hare-lip I give at this time the preference to that of Dr. Stokes.

LOUISVILLE.

Reviews.

Thermic Fever, or Sunstroke. By H. C. Wood, Jr., M. D., etc. Philadelphia: J. B. Lippincott & Co. 1872.

This little volume is a Boylston prize essay; and after looking carefully through it one is not surprised that it was crowned with success. It is an attempt to determine by experimental induction the cause and nature of sunstroke, and forms a truly valuable contribution to the literature on that subject. The author begins by describing—which he does with great clearness—the morbid condition which constitutes sunstroke, and by a series of experiments he then establishes the cause and the pathological state which leads to death in the disease. He proves conclusively, what is now generally admitted by the profession, that it is a true *thermic* fever, the temperature of the body being raised to a point inconsistent with health and life. The real and sole producing cause is heat, and it is not necessary that that should act directly upon the head, as was once believed, nor even be heat from the sun, as is implied by the terms sunstroke and *coup de soleil;* but it may be the heat of barracks, or of an ironing-room, or of a sugar refinery.

There can be no question that many cases of sudden death and alarming illness occurring in hot weather from other causes are mistaken for sunstroke, and that other conditions than that of true thermic fever result often from exertion of the body under a hot sun. Exhaustion is not an uncommon occurrence among soldiers and laboring men in hot climates in the summer season; but the symptoms in that condition are entirely different from those which attend the morbid

state under consideration. The skin is moist and cool; the pulse is rapid, feeble, fluttering; there is great muscular prostration and tendency to syncope. In a recumbent posture, and under the influence of stimulants, the subjects of this exhaustion promptly revive. But in sunstroke the symptoms are those of an ardent fever, with grave disturbance of the cerebro-spinal nervous system. The patient falls down and lies insensible, comatose, with labored and often stertorous breathing, and an intensely hot and generally dry skin. The temperature of the body rises to 108° or 113° F. The pulse is rapid, and at first not wanting in force. *Subsultus tendinum* is frequently present, and spasms of an epileptiform or tetanoid character are not unfrequent; but in many cases the patients are motionless from the commencement of the attack as from utter prostration of the spinal cord. Thus from this list of symptoms it will be seen that it can not be difficult to distinguish at once between genuine thermic fever and cases of exhaustion resulting from heat and violent exercise.

The symptoms of sunstroke, as has been stated, are as readily induced by exposure to a high artificial temperature as from the direct action of solar heat. Animals subjected to excessive heat are at first restless, then grow languid, and finally become comatose. The phenomena attending the process differ only in degree from those of sunstroke. Dr. Wood exposed a young rabbit in a box covered with glass to an atmosphere heated to 120° F., the temperature of the animal being 104°. In fifteen minutes the heat of its body rose two degrees, and its respiration was hurried. In fifteen minutes more it had attained a temperature of 109°, when the rabbit had convulsive attacks; and at the end of three quarters of an hour its temperature had reached 112°. The animal was relaxed, breathing 220 a minute; and when its temperature rose to 114°, which it did in an hour and a quarter from the beginning of the experiment, the rabbit was unconscious and motionless. In a second experiment a rabbit was found dead

at the end of two hours and thirty-five minutes, its temperature having reached that of the box in which it was confined, namely, 112°. A similar experiment was made with a dog confined in a hot box. The animal expired in an hour and forty minutes, its body showing a temperature of 110¾°. A pigeon lived in a hot box until its temperature rose to 120°; but it is to be remembered that the animal heat of birds is greater than that of mammals. In many of the experiments performed by Dr. Wood the animals had convulsions before death.

The question how death is produced by this exalted temperature is one of much interest, and is discussed at length in the essay of Dr. Wood. What is the *modus operandi* of an abnormal heat upon the living tissues? An ingenious suggestion has been offered that it causes coagulation of the *myosin* of the heart, thus arresting the circulation. This theory, which has found advocates in Vallin, Harless, Kuhne, Claude Bernard, and Stannius, and others, is founded upon the fact that *musculin*, the peculiar principle of the muscular fiber, is coagulated at a temperature a few degrees above the normal heat of the animal from which it is derived. The point of coagulation for most mammals is about 113° F.; but it varies with the species, and even in individuals of the same species under different circumstances, sometimes taking place at a lower degree, and occasionally requiring a greater heat to bring it about. The variation, however, has a narrow range, and it is certainly a fact of decided interest that the temperature of its coagulation is also the death temperature of the animal. Yet there are facts which compel us to reject this explanation as the true one in all cases of death from sunstroke. Let us notice some of them.

Dr. Wood has compiled a table of sixteen fatal cases of sunstroke, showing the temperature of the body in each case before or just after death. From this it appears that in most instances death occurred before the subjects had reached the temperature at which musculin coagulates; namely, at about

108° F. In one individual, whose case was reported by Dr. Dowler, of New Orleans, it had risen to that point, and in a second it was found to be 112°; but in some it was only 106°, and in two it was as low as 104°. In these, of course, there could not have been coagulation of the muscle plasma. But, besides these observations, experiments performed upon animals prove that they often die, in atmospheres artificially heated, when their bodies are still several degrees below the point at which coagulation of their musculin takes place. And further, in the experiments of our author just referred to the heart was repeatedly found beating vigorously after respiration had ceased and the animals were really dead. This would have been impossible with the *myosin* of the heart coagulated.

From all this it is apparent that while in some instances such coagulation may arrest the heart's action, and in this way induce the fatal result, it can not be the cause of death in most cases of sunstroke. In no instance did Dr. Wood find the heart still until after respiration had been arrested. Much less can we attribute death in these circumstances to coagulation of the blood and the formation of clots in the heart and vessels, as has been conjectured by Wickard, and set forth more recently by Dr. Richardson, of London. So far from a tendency of the blood to coagulate in the subjects of sunstroke, loss of coagulability is the one great lesion observed in these cases both by experimentalists and physicians; and coagula, as a consequence, are rarely met with in the hearts of men dead from the disease or of animals killed by heat. Nor is the theory of Eulenberg and Vohl, that death is caused by the sudden liberation of gases in the blood, more tenable. It rests upon no ascertained facts. No such accumulation of gases in the blood has ever been observed, and there is no reason to believe that it ever occurs.

The true history of the morbid process in men and animals dying from the effects of heat seems to be as follows: at a

temperature ranging from 108° to 113° the brain becomes seriously affected, insensibility, with or without convulsions, coming on. Rapid change of tissue is the necessary effect of this high temperature, and arrest, more or less complete, of excretion, in consequence of which the blood becomes deteriorated in quality. Gradual asphyxia results, by which the amount of oxygen in the blood is greatly lessened, and thus all the symptoms are aggravated. Death takes place by asphyxia. The fatal paralysis occurs first, not in the heart, but in the lungs. This, it can hardly be doubted, is the rule, but there are probably exceptions. When the heat of the body rises to 113° there is every reason to believe that the muscle plasma becomes coagulated, and death then follows instantaneously from rigidity of the heart. Dr. Wood ascribes the sudden death of British soldiers in East India, occurring in time of battle or during rapid marches, to coagulation of the heart's myosin.

In regard to the treatment of sunstroke few remarks are necessary. The indication is to lower the temperature as quickly as possible by the free use of cold water, and the success will depend upon the mischief done before the application of the remedy. If resorted to before fatal asphyxia has come on, or the heart has become paralyzed, recovery may be expected in a short time. After the mischief has reached a certain point the case is necessarily fatal.

Although the attack of sunstroke is sudden, the formidable symptoms are preceded by fever, dry skin, restlessness, and other phenomena, which, if recognized and understood by the patient, would suggest a preventive course that would probably be always successful. Thermic fever is essentially a disease of exalted temperature, and can never arise if the heat of the body be kept down. Thick clothing favors its development, and once aggravated seriously its mortality among English troops in the East Indies. Irishmen not accustomed to our climate are oftener the victims of the disease than any

other class of our population; not only because they are unacclimated, and perhaps drink more whisky, but because they persist in wearing thick woolen shirts during our hottest summer weather.

There is, we conceive, an importance in the foregoing facts, so clearly exhibited by Dr. Wood in this work, far beyond the light they throw on the nature of sunstroke. In many diseases besides this thermic fever the temperature, it is well known, rises to a point which, experiments show, can never be attained without greatly endangering life. We have looked upon the abnormal heat in these cases as an indication of danger, but have not been in the habit of regarding it as the danger itself against which we have to guard. But why, if animals are killed by a certain elevation of the heat of their bodies, should we doubt that our patients are destroyed by the same heat resulting from disease? The temperature which arrests respiration in sunstroke, and in dogs confined in a heated atmosphere, will infallibly cause asphyxia in scarlet fever. The same rapid disintegration of tissue must go on with a similar defilement of the blood. The myosin is coagulated as readily by febrile as by solar heat. In a word, all the mischief wrought by exposure to an ardent sun or a heated atmosphere, or by heating animals artificially, must result from the high temperature of disease. It follows that it is a matter of quite as much importance to reduce the heat in the latter as in the former circumstances; and in this view refrigeration in the practice of physic assumes a consequence not hitherto generally accorded to it. In fact, looking at the matter in this light, the principal thing in those morbid states attended by high temperature is to cool the system. Cold water, or water so applied as to carry off the preternatural heat, must assume a higher rank than ever in the treatment of all fevers. A man threatened with sunstroke, if cooled down before fatal injury has been done to the brain, heart, or lungs, is soon

relieved. In fevers, there being a disordered condition back of the abnormal heat, and the efficient cause of it, the effect of cold water can not be so decided; but it checks disintegration by reducing the temperature, and thus arrests the changes which end in fatal coma, convulsions, and asphyxia.

The profession is coming slowly to appreciate cold water at its true value in the management of fevers; but its use is by no means yet so general as it ought to be in such affections. No febrifuge, it is now for the most part conceded, is comparable to a wet sheet in remittent and intermittent fevers. Nothing reduces the temperature so speedily and effectually as water evaporating from the surface of the body. It is worth all the diaphoretics in the materia medica, and is susceptible, we have no doubt, of a far wider application than has ever yet been made of the remedy. In scarlatina, and the many other diseases characterized by pungent heat of the surface, it would seem to be indicated above all other remedies; and experience, so far as it has gone, justifies the expectation of highly beneficial results from this mode of practice. L. P. Y.

The Treatment of Syphilis with Subcutaneous Sublimate Injections. By Dr. George Lewin, Surgeon-in-chief of the Syphilitic Wards and Skin Diseases of the Charité Hospital, Berlin. Translated by Carl Proegler, M. D., late Surgeon in the Prussian service and in the United States Army, and E. H. Gale, M. D., late Surgeon in the United States Army. Philadelphia: Lindsay & Blakiston. 1872.

The translators of Dr. Lewin's little work have done a real service to such of the profession in this country as treat syphilis and do not read German by rendering the volume into English. Dr. Proegler is already known to the readers of the American Practitioner by his contributions to its pages; and though he has not resided long in America, he has

already done much for its periodical medical literature. We welcome him in his new role, and take pleasure in bearing testimony to the excellent manner in which he has performed its requirements in the present instance.

The precise place which hypodermic mercury should occupy in the treatment of syphilis is still an open question. Many physicians who have used it have been disappointed in its effects. Others have found it unmanageable, while others again have reported unexampled success in its application. Between these several classes it is a difficult task to decide. The carefully-conducted experiments of Dr. Lewin, running now through a period of seven years, and embracing more than two thousand cases, will go a great way toward settling the question. They seem clearly to sustain those practitioners who oppose large quantities of mercury being introduced into the system, since the average amount of the mineral found by our author necessary to effect a cure was from but one and a half to two and a half grains of the bichloride. This is certainly encouraging, if it is not somewhat startling to those of us who have given mercury by the mouth, by inunction, and by fumigation.

The instrument with which the injections are performed is the ordinary hypodermic syringe. The situations preferred by our author for their introduction are the region of the gluteii muscles, and the infra-scapular and sacral regions. The fluid which he uses ranges in strength from three to six grains of corrosive sublimate to the ounce of water; four grains to the ounce being his favorite in hospital practice, while among private patients he usually begins with the weaker solution; reversing in this respect, as will be observed, the practice of English and American syphilographers, which is to give smaller doses and milder mercurials to hospital than to private patients. The minimum quantity for each daily injection is one tenth of a grain of the salt. The maximum is three eighths of a grain. Which of the two shall be used depends

first on the constitution of the patient, next on the gravity of the case. Salivation is as much to be guarded against, and perhaps is even more to be dreaded in hypodermic mercury than in the older methods. Should it occur, Dr. Lewin relies mainly upon chlorate of potash internally and as a mouth-wash. Throughout the treatment he urges increased care of the teeth and a daily inspection of the gums.

Hypodermic mercury does not confine the patient to the house; on the contrary, our author advises outdoor exercise.

While the final conclusion of our author is that hypodermic mercury alone is quite sufficient for the cure of syphilis, yet, with the view of diminishing the pain of the injections and lessening the tendency to relapse, he combines small quantities of morphine with the mercury. And in his tables the best results are seen where the iodide of potassium or tannin was used in conjunction with the injections; results, however, which Dr. Lewin thinks were more than counterbalanced by the tendency of the former to increase the danger both of salivation and of relapses, and of the latter to disturb the digestive apparatus.

We should be glad to continue this most interesting subject, but our space will not allow of it. We refer the reader to the book itself, a well-printed and handsomely-bound volume of two hundred and fifty pages.

The Science and Practice of Medicine. By WILLIAM AITKEN, M. D., Edinburgh, Professor of Pathology in the Army Medical School. Third American from the sixth London edition, with additions by MEREDITH CLYMER, M. D. In two volumes. Philadelphia: Lindsay & Blakiston. 1872.

The third American reprint of this standard work is from the sixth London edition, and may justly be regarded as fully representing the most advanced views of both the science

and practice of medicine. The learned author has paid the American editor the deserved compliment of incorporating in the present volume nearly the whole of the matter contributed by Dr. Clymer to the former edition of his work, and which, it is needless to say, added very largely to the value of the book in the eyes of American readers. Dr. Clymer has made yet further additions to the recent work on the following subjects: camp-measles, spinal symptoms in typhoid fever, typho-malarial fever, chronic malarial toxæmia, epidemic cerebro-spinal meningitis, cholera morbus, cholera infantum, chronic alcoholism, delirium of inanition, chronic pyæmia, syphilitic disease of the liver, shaking palsy, myosclerosic paralysis, and cerebro-spinal sclerosic paralysis.

It would be beyond the capacity of any one man to write two thousand pages on the different topics embraced in a work on medicine, and write them all equally well, and make them all what they might be made. Dr. Aitken has perhaps as nearly attained this end as any author who ever lived, and yet he has admitted into the several editions of his magnificent work a chapter on small-pox and varioloid which is in no sense worthy of the subject or of most of the other parts of his book. The treatment which he inculcates is, we must think, altogether behind the times. But we have not the heart to pick flaws, where they are so few, in a work which, as a whole, has no equal in the language, and which is so orthodox in its views and so practical in all its details.

The style in which the publishers have issued the volumes has again added to the obligations under which they have already placed the profession in so many instances.

Clinic of the Month.

EUCALYPTOL TO DISGUISE THE TASTE OF COD-LIVER OIL.—The number of substances suggested at one time and another, by one writer and another, to mask the taste of cod-liver oil is past counting, yet we know of nothing which does it. The last is the essence of *eucalyptus globulus*, which has recently been used by Dr. Duquesnel to mask the disagreeable flavor and odor of cod-liver oil, and the result, he says, has been most satisfactory. He mixes one hundred parts of cod-liver oil with one part of the essence of eucalyptus. The oil thus aromatized, he states, has neither the taste nor odor of cod-liver oil. It is readily swallowed, and leaves in the mouth or on the tongue only the flavor of the essence with which it is mixed, and the disagreeable eructations which follow the taking of the pure oil are completely modified. To keep the aromatized oil it should be put in closely-stoppered bottles.

TREATMENT OF ERYTHEMA NODOSUM.—Dr. H. S. Purdon, of Belfast, Ireland, in a short paper on this subject, in the Dublin Journal of Medical Science, says that as a rule he finds no difficulty in managing erythema nodosum by prescribing the compound iron mixture and compound decoction of aloes combined, and adding, in cases where the catamenia is suppressed or scanty, to the mixture borax; while locally, if pain is much complained of, a lotion of acetate of lead and opium or iodoform ointment (one drachm of iodoform to an ounce of lard, a few drops of rectified spirits being used to dissolve the iodoform), which is a good anæsthetic, are used. A flannel bandage being applied every morning and worn

during the day, however, especially in people more advanced in years than those to which my remarks refer, and in whom this disease is not only rare but also very obstinate, the peroxide of hydrogen and tincture of the perchloride of iron are the remedies to be recommended. The dose is a tea-spoonful of the peroxide and ten to twenty drops of the tincture of iron in a wine-glassful of water thrice daily. (It will not do to order these two medicines together as in a mixture.) Dr. Brown-Sequard has recorded the fact that oxygen and strychnine contained in the blood have the power of acting on the excitability of nerve-fiber in the nervous centers or in nerve trunks or filaments, and thus the peroxide, he thinks, in erythema nodosum tends materially toward restoring a healthy tone in the part affected. If the premonitory symptoms of fever with which the eruption is ushered in be at all severe, rest in bed and an effervescing saline aperient is all he considers that is necessary.

Clinical Lecture on Lithotomy.—Professor Humphrey, F. R. S., in a lecture on this subject (Lancet), says:

"The secret of success in operations, as in all other efforts in life, is a painstaking and careful method of procedure; and in no operation is this more true than in lithotomy. In it the recovery of the patient depends, perhaps more directly than in any other, on the manner in which it is performed. Accordingly when, thirty years ago, having just emerged from the period of pupilage, I had the good fortune to be appointed surgeon to this hospital, where I knew I should often be called upon to perform lithotomy, I was much impressed with the responsibility of the task, and set about seriously to consider the mode in which it could best be done; and I laid down for myself a plan to which I have ever since closely adhered. A careful investigation of the subject, and a consideration of the different modes of operation practiced by the most eminent men, convinced me that

in this, as in most operations, the minimum of deep cutting was the safest course and gave the best results. Reading confirmed what observation had shown me, and what reason had suggested, that not the brilliant but the cautious operators were the most successful. I came to the conclusion that in deeply-seated parts it is better to make nineteen or twenty cuts, amounting in the aggregate to nine tenths of an inch, provided that is sufficient, than one cut amounting to an inch. The extra tenth will, now and then, turn the scale against the patient, though the quicker proceeding may seem to tell in favor of the operator.

"You saw, on Friday last, the plan I am in the habit of following. The patient, a middle-aged, healthy man, was admitted on the previous Wednesday, and had not therefore undergone any preparatory treatment, which, I think, as often does harm as good by depressing the spirits and lowering the bodily tone. He was not very clear as to the duration of his symptoms, but it appeared that they were not of long standing, and the sounding indicated the stone to be small. Why then did I not perform lithotrity? I believe it would have been a good case for it, and I was half disposed to do it. But a good case for lithotrity is one in which lithotomy, carefully performed, is attended with very little risk, with quite as little, I believe, as lithotrity. It is less painful, quicker, and more certain; and the greater number of our patients prefer this more expeditious process. I use the common staff, with the groove on the convex side, in preference to one in which the groove is placed laterally, as recommended by Mr. Liston; because the groove, when on the convex side, is more easily felt in the perineum, and the knife is more easily pressed into it, and is less likely to escape from it. A common scalpel is quite as good as any of the variously-formed knives which have been employed in this operation; and it is advisable to adhere to a few instruments, just as it is advisable to adhere to a few remedies. By using many of either we merely dilute

and waste our experience. The man who uses a few weapons is more likely to wield them skillfully than he who tries, and so perplexes himself with, many. Having made a tolerably free incision through the skin and superficial fascia, I pushed my left forefinger through the tissue of the perineum, down upon the staff a little behind the bulb, so that I could feel the groove of the staff sufficiently to guide the point of the knife upon my finger-nail into the groove. I then cut a little way along the staff, withdrew the knife, examined with my finger, and, again introducing the knife as before, cut a little more, repeating the process till the part of the prostate nearest to the surface was divided, and till I could insert my finger, alongside the staff, through the prostate, into the bladder. Thus the opening was dilated. It was further dilated by my passing the forceps, beside the finger, into the bladder, which I did after having explored the bladder, and felt and ascertained the size of the stone. I make a point of doing this, as it greatly facilitates and gives safety to the further steps of the operation; and, having the advantage of a long finger, I am almost always able to examine the size and position of the stone, and select the forceps accordingly. These should be so made as to hold the stone securely and not let it slip from between the blades; and the blades should be broad, so as to cover the stone and prevent its sides catching and rubbing roughly against the tissues as it is drawn through the wound. In the present instance the forceps did not open easily, in consequence of the hinge not being quite free. To have used force in opening these might have endangered the wall of the bladder; so I at once withdrew them and resorted to the scoop, which I guided upon the finger again introduced, and with which the stone was quickly removed. An elastic tube, guided upon the finger into the bladder, was secured there, and removed on the third day. The man has not had the slightest pain or discomfort since the operation, and is doing well.

"The points on which I lay most stress are the pressing the finger down upon the staff in the membranous part of the urethra, and guiding the scalpel by it into the groove, the careful cutting into the prostatic part of the urethra, and the completing the operation with the finger and the forceps or the scoop. I rarely do more cutting than this. If it is a large stone, I divide the prostate a little more freely with the knife, and then allow the wound to be dilated by stretching or tearing of the tissues as the stone is drawn through it, which I do slowly and steadily, though I sometimes have to use considerable force. By this plan there is no greater division of the tissues than is absolutely necessary, and there is less danger of ill consequences than if the knife is resorted to. I ought to add that it is necessary to be very careful not to allow the finger, still less the knife, to stray into the loose tissue on the exterior of the prostate. Particularly is this care needed in operating upon children. I am sure that many of the disasters which have occurred in the operations upon young subjects have been caused by the finger pushing its way on the exterior of the prostate and bladder, where the tissue easily gives way before it, and where a cavity is easily made by the finger, which the operator mistakes for the bladder. Into this he plunges the forceps, perhaps seizes the bladder or the rectum, or does some fatal mischief. In a little child it is sometimes difficult to enter the bladder. The tissues are soft, and readily give way before the finger. The bladder seems to be at an unexpected distance, and the operator is unnerved by the difficulty. I can give no more valuable hint than that of preparing a young operator for this difficulty, and of warning him to be content to go slowly on, not to be seduced into quitting the guidance of the staff, not on any account to withdraw the staff till he is certain that his finger is in the bladder, and till he feels the stone with it; but to work quietly and gradually on with finger and knife till he has brought the finger into contact with the stone.

Indeed, it is a good rule, from which I hardly ever depart, not to allow the staff to be withdrawn from the bladder till the finger is upon the stone, and not to withdraw the finger till the forceps or scoop is in the bladder. I do not use a very large staff, because it increases the difficulty of passing the finger along it through the prostate. I introduce it with a slight wriggling, rapid, but gentle movement. I am not satisfied unless I hear it strike the stone, as well as feel its contact with it. The ear is in this case a better guide than the finger; and if this were more attended to the cases in which a stone is not found would be fewer. The touch is often deceptive, especially in children, in whom the projecting and slightly-roughened rugæ of the bladder frequently communicate, when the sound is passed quickly over them, a sensation to the finger like that given by a stone. I was present not very long ago when an operator opened the bladder and could not find a stone. To my inquiry, two or three times repeated, 'Did you hear the staff strike upon the stone before commencing the operation?' the reply was, 'Oh, we felt the stone quite distinctly; there was no doubt of that.'

"Rules in surgery, however, must sometimes be departed from, and judgment and skill may be more shown in the breaking than the observing them. A lad was in the hospital two years ago with severe symptoms of stone, the urine constantly passing. The sound appeared to grate upon something, but we could not hear it strike a foreign body. Several trials gave the same result. The symptoms were so bad that it seemed best, at any rate, to open the bladder and search for the cause. Accordingly, having introduced the staff as usual, and perceived the grating, I cut carefully upon it and along it quite to its end. I could not discover a stone, and I soon became certain that neither my finger nor the staff was in the bladder. The staff, being no longer of any use, was withdrawn. Then my finger touched the end of a rough stone. Supposing that this had escaped from the bladder into the

surrounding tissue, I was endeavoring carefully to extract it when it disappeared; and my finger, following it, passed through what was evidently the prostatic part of the urethra into the bladder, and felt the stone there. It was removed without difficulty. It is, as you see, composed of two oval parts, united at an angle of about one hundred degrees. Of these one has a nucleus of lithic acid and lay in the bladder; the other consists of phosphate of lime, and lay in a cavity or urethral pouch outside the bladder; and the bent neck joining the two occupied the prostatic part of the urethra. The staff, no doubt, had passed into the urethral pouch, beneath the calculus, had probably penetrated the delicate wall of the pouch, and found its way into the cellular tissue behind the bladder, into which I traveled along its groove with scalpel and finger. The stone lying in its concavity was not discovered by my finger till the staff was withdrawn. The boy quickly recovered.

"You observed, last Friday, that I quickly relinquished the forceps, and resorted to the scoop. This is an excellent instrument and very safe, because it does not go much beyond the range of the finger. It is not trusted in the bladder without the finger, and is not opened and shut and moved about in the bladder so freely as the forceps are; and with a little practice the stone is very easily caught between it and the finger, and drawn through the wound. Even large stones may be thus removed. This stone weighed eight ounces. It is the largest I have ever seen extracted by lithotomy. It is nearly spherical, is rough on the exterior, and was grasped by the bladder so that I could not lay hold of it with the forceps, and should probably have failed to complete the operation had I not fortunately taken with me (it was several miles from Cambridge) this strong, well-bent scoop. I contrived to insert it between the bladder and the stone; and it held to the stone so well that with it and my finger I succeeded in gradually drawing the stone through the wound. The

patient, a stout farmer, aged sixty-five, recovered without any unfavorable symptom. The handle of the scoop should be large and rough, and the stem round and strong. In some of these scoops I have had the bowl set sideways on the stem, which sometimes facilitates the catching of the stone between it and the finger.

"With regard to hemorrhage, I am in the habit of telling my pupils that hemorrhage after an operation is almost always attributable to some fault on the part of the surgeon. It indicates that he has not been sufficiently careful in searching for the bleeding vessels, or that he has not properly secured them. This is, at any rate, a very safe doctrine to inculcate; and it applies to lithotomy as well as to other operations; for the vessels which bleed most briskly, and are most likely to give trouble after the patient is placed in bed, are commonly within reach, and may with care usually be found and tied. They are the artery of the bulb, or the transverse artery, or some branch divided near the pudic, any of which may be tied. After the removal of the stone I always attend to this point, and sponge out and explore the wound carefully, if there is any bleeding which is likely to give trouble. When the hemorrhage is from a deeper source than I have indicated (that is, from the neighborhood of the prostate) it can not always be arrested; but in such cases it usually ceases spontaneously after a short time, there not being commonly any arteries in this situation sufficiently large to keep up or to cause a return of the bleeding.

"I leave an elastic tube, passed through the wound, in the bladder, in men, to avoid the difficulty which is sometimes experienced by the patient in voiding urine after the operation. I do this because I was in several instances summoned, after a few hours, in consequence of the patient being in severe pain and unable to pass urine; and I was obliged to introduce my finger into the bladder to afford relief. This trouble, which was perhaps in consequence of the small size

of the incision I am in the habit of making into the bladder, is quite prevented by the tube. The tube may be removed in two or three days, or earlier if desirable, and is not again required.

"In one instance—a gentleman, aged sixty, in whom the operation was unattended with any particular circumstances—there was rather severe inflammation of the bladder ten days after the operation, with discharge of tenacious and semi-purulent mucus. For several days I introduced, two or three times a day, an elastic catheter by the urethra into the bladder, and injected through it warm water, which, passing out at the wound, washed out the bladder. The symptoms subsided, and he was soon quite well, and has remained so. In another case, when the wound was healing, the patient, a farmer, aged sixty-four, had retention, and required the catheter to be introduced two or three times daily. After a time he quite regained the power. In a third patient, a middle-aged man, in the hospital, the symptoms of bladder irritation set in while the wound was healing, and increased in severity, so that I introduced a sound, and, discovering a calculus, I reopened the wound, partly with the knife directed by the staff, and partly with the finger, and removed a rough, phosphatic calculus, which, I have no doubt, had formed in the interval since the first operation, when the stone removed was lithic acid. I mention these cases because it is possible that the symptoms may have been dependent upon the incision in the prostate having been small, and the parts having in consequence, sustained some injury in the extraction of the stone. I do not know that it was so; and if it was, the occasional occurrence of such events would not induce me to deviate from the practice I am in the habit of pursuing.

"With regard to the after-treatment, it is very seldom that any is required. The diet should be not according to any rule, but regulated by the condition and the desires of the patient. He usually prefers to limit himself to tea, broth, etc.,

for a day or two; and this generally suits him best. Then appetite returns gradually, and may be yielded to. We do not often find that wine is necessary. The man now under treatment, as I just said, has had no pain or discomfort whatever. Generally some pain is experienced when the urine flows, or at other times; but whether there is much pain or little, whether the patient sleeps or does not sleep, I refrain from giving opium or any other sedative. Pain, even severe and long continued, though hard to bear, does not seem to do the body much harm. I have often been surprised how little wear and damage it does—not so much, I think, as the sedative which is given for its relief; and the exhaustion of a sleepless, restless night or period is usually followed by sleep, which is more likely to occur naturally at an early period if sedatives have not been used. Under ordinary circumstances a restless night is less damaging than a night of sleep induced by a sedative. The patient commonly wakes from the latter paler, weaker, lower, more enervated, and less able to bear pain. I have long had this conviction; indeed, throughout life I have acted upon it. It may be regarded as a prejudice; but I think the patients recover better and quicker, and are less liable to pyæmia, erysipelas, and other unfavorable sequelæ of operations when thus treated. These, at any rate, we rarely see in Addenbrooke's Hospital; and an immunity from them is, I think, partly due to the practice of non-interference after operations so generally followed in this hospital. You will understand that I make a distinction between the use of opium as a remedy for disease and as a means of relieving pain after operations. In the former case it is a very valuable medicine under many circumstances, one of the most valuable we possess. But in the latter case there is no disease; the pain is merely a natural consequence of the physical injury which has been sustained, or of the local changes which are taking place as a consequence of the injury. The condition will generally subside after a short time; and it is much

better to allow it to do so, unless there is some special reason for interference. It is well to suspend the scrotum, especially in elderly persons, so that it does not become moistened with the urine, to keep the parts as dry as possible, and to defend them by the occasional use of oil. I do not remember any instance in my practice in which the wound failed to heal soundly within a few weeks, or in which any unpleasant symptom, except slight difficulty in holding the water, followed; or any case in which the rectum was wounded, or in which any troublesome local symptom remained."

Treatment of Burns.—Dr. Frank, of Berlin, in an exhaustive paper, in *Virchow's Archiv.*, on the general phenomena occurring after extensive burns of the skin, based on experiments on animals and carefully observed cases in the human subject, states that the diminution of the temperature in the lesion under consideration does not depend upon chemical changes of the blood, but principally upon the physical action of the cutis after burns, and that *the increased loss of caloric through the skin is its principal cause.* He considers that the physical effect of a temperature far above that of the blood on the skin, when hot water or other substances of a high grade of heat come in contact with it, causes *a dilatation of the cutaneous blood-vessels; hence hyperæmia of the cutis and increased radiation and loss of caloric—falling off in the temperature of the body*, under certain circumstances, to as low a degree as that which causes freezing of the body.

The principal indications of treatment are, *to counteract the fatal sinking of the bodily temperature, and to elevate it and maintain it as near the normal degree as possible, and to sustain the muscular power of the heart, and to prevent paralysis of the nerve centers.*

The usual treatment of applying different ointments, salves, etc., to the burned surface, whether they are used with that intention or not, accomplish the first object to some extent by

furnishing an artificial epidermis, and by diminishing evaporation. Wrapping the whole body in cotton-wadding answers a similar purpose; but the judicious use of warm baths—which Beaupré has used in the last century, with the most gratifying effect, in two very severe cases, and which have also been warmly recommended by Hebra—furnish undoubtedly the most efficient and the most acceptable remedy to elevate and control the bodily temperature, in relation to time and degree, exactly to suit the circumstances of each case. Billroth's interesting statement, that he succeeded, by full baths of several hours' duration, in elevating the temperature in the case alluded to above from 33° to 37° Centigrade (91.4° to 98.6 Fahrenheit), furnishes proof to that effect. Valentine, who first established the fact that animals apparently without animation, in consequence of the effects of varnishing their bodies, could be revived by artificial warming, proposes to establish this in men by heating the air of sick-chambers, without charging it at the same time with watery vapors or noxious products of combustion, on the principle that air is not as good a conductor of heat as water. The general oil-baths recommended by Wydler, from other reasons, must certainly answer the purpose of counteracting the loss of caloric, and deserve the full attention of the profession.

Goltz, in his essay on the influence of the central nervous system (*Virchow's Archiv.*, vol. 28, p. 422), shows conclusively that interruption of the muscular tone of a larger portion of the blood-vessels is followed, from purely mechanical causes, by a diminution of the propelling power of the heart; that the blood accumulates rapidly in the relaxed vessels, like it would in a suddenly-established aneurism; that the heart operates laboriously, like a pump without sufficient water; and that if the contractile tone of the vessels ceases, the action of the heart becomes powerless on account of the increased vascular capacity. In extensive burns this very condition exists and causes death at once, or after awhile, in

connection with the increased loss of caloric. The sudden death from extensive burns which has been described by many authors as having occurred from inanition, nervous collapse, shock, etc., must be ascribed to such occurrences. The comparative absence of palpable lesions in the great viscera in cases of sudden death, as well as the hyperæmic condition in which some of them are found by autopsy of cases of less sudden death, are accounted for by them. The latter, occurring in the brain, air-passages, and intestines, are passive congestions from paralysis of the heart, not active fluxionary congestions from interrupted cutaneous action; and their frequent absence in autopsies, in the most violent lesions of that kind, is undoubtedly owing to the large amount of blood which accumulates and remains in the injured cutaneous tissues.

This paralysis, or rather gradual loss of motory power of the heart, is therefore one of the greatest dangers threatening severely-burned individuals. The judicious but energetic use of exciting and stimulating remedies is therefore decidedly indicated, in spite of Beveridge, who looks upon the increased sensation of pain caused by their use as a new danger to life. The normal or increased frequency of the pulse forms no contraindication to their use.

The principal therapeutical object, however, in the treatment of extensive burns of the skin, as this paralysis of the heart has the dilatation of the blood-vessels throughout the extent of the injured cutis for its primary cause, must consist in the removal of the cause of this dilatation. Dr. Frank has sufficiently demonstrated that the energetic application of ice will not answer this purpose, while ergotine, when injected into the abdominal cavity of frogs, produced a considerable and marked contraction of the capillaries of their swimming membranes, previously enlarged by scalding with hot water. His experiments in relation to the effect of ergotine on scalded rabbits led to definitely favorable results only in two instances.

He ascribes this circumstance to the great difficulty of applying to animals the appropriate amount of stimulation to sustain the action of the heart. He recommends the careful experimental use of this remedy in severe cases of extensive superficial burns, in the form of hypodermic injections.

Arsenic in Menorrhagia and Leucorrhœa.—Dr. J. H. Aveling, of London, writes, in the British Medical Journal, of the use of arsenic in menorrhagia and leucorrhœa as follows:

"The preparations I have usually employed are two—the liquor arsenicalis, and the arsenious acid in granules, each containing one milligramme. This latter is an elegant form of administering the remedy; for, as it has to be taken at meal-times, the granules can be placed on the tablecloth, wrapped in a morsel of bread, and swallowed unobserved. Considerable difference of opinion exists as to the best mode of giving arsenic, some employing large doses in quick succession, and others small, extending over a long period. Aran says: 'The rapid mode of administration is better than the long continuance of small doses, because the economy habituates itself to the latter, and the therapeutical effects may be lost; and the proceeding has the additional disadvantage of leading more easily to the saturation of the economy, and consequently to intolerance.' On the other hand, Sir James Simpson says: 'Most reliance ought to be placed on small and very long-continued doses of arsenic; and it is infinitely better and safer to trust to the curative effect of the long continuance of such small doses of this remedy than to attempt to arrive at the same result by throwing in larger doses for a shorter time.' Dr. Hunt says: 'Large doses taken for a short time produce much distress, without the desired effect on the uterus.' The plan of small and long-continued doses is the one which I have always used; and the result has been so satisfactory that I have never thought of adopting

the more rapid method. The doses with which I commence are from two to six drops of the solution, and from one to three of the granules, three times a day, at meal-times. These are small doses, when we remember that a Styrian arsenic-eater has been known to take as much as five and a half grains of arsenic at once; but they are strong enough to commence with, and may be increased from time to time as the necessities of the case suggest and the patient's capability of bearing the remedy permits. It is advisable to suspend its administration occasionally for a short time. This indeed may sometimes be necessary should diarrhea, nausea, or pains in the stomach supervene. It is also better not to discontinue the doses abruptly. They should be gradually diminished in quantity, and taken less frequently.

"The first effect of arsenic is to improve the digestive powers. The appetite returns, and often in two or three weeks the patient has improved in appearance and increased in weight. Besides this improvement of nutrition there is soon evident increased tone of the nervous system. Respiration and secretion are better carried on; and M. Lolliot has established that ten milligrammes of arsenious acid, taken each day, produce lowness of temperature and diminution of urea. The Styrian arsenic-eaters are generally strong and healthy persons, courageous, and of strong sexual disposition. If requested to explain why they take arsenic, they say it is to make them strong and healthy, and to improve their wind in ascending mountains. M. Isnard, in his work on Arsenic in Diseases of the Nervous System, shows that it replaces altogether sedatives, antispasmodics, and tonics, calming pain, spasms, and convulsions, and stimulating depression of the nervous force. For my own part, I think the most valuable therapeutic effect of arsenic is its decongestive action upon mucous membranes.

"But before endeavoring to explain the mode in which arsenic affects a cure in cases of menorrhagia and leucorrhœa,

it would be well to examine the primary pathological condition of the uterus which causes them. This condition is, in a great majority of cases, one of hyperemy, which has been defined by Andral, the inventor of the word, as excess of blood in the capillaries. Hyperæmia of the uterus may have a physiological or a morbid origin—physiological when caused by sexual excitement, menstruation, or pregnancy; morbid when it is the result of pre or post-inflammatory action, of traumatic, chemical, or morbid irritation, of an atonic, obstructive, or hypostatic cause, or of heat, cold, etc. Of course I do not wish to deny that menorrhagia and leucorrhœa may be produced by polypi, muscular fibroids, cancer, and many other pathological conditions; but I would at the present time draw attention more particularly to those forms of menorrhagia and leucorrhœa which have a hyperæmic origin, because it is in these that arsenic will be found most efficacious. In short, it is the morbid condition, of which menorrhagia and leucorrhœa are but the secondary phenomena, which I propose to treat with arsenic; for if we can cure the former, the two latter must necessarily disappear. Yet I would not have it understood that these consequent symptoms are to receive no attention. Both must be checked when excessive. All gynecologists, however, know how imprudent and injurious it is to stop abruptly discharges which are often nothing more than nature's method of relieving the hyperæmic condition of the parts from which they emanate. Hyperæmia of the passive or atonic character is that which is most benefited by the use of arsenic. The uterus, when in this condition, is larger and softer than in its normal state. It is usually tender to the touch, but not always so. To the eye it appears of a deeper red than is natural. After death the capillaries are found dilated and the tissues tinged with red. Unlike the color produced by inflammation, however, this redness can be removed by careful washing. A patient coming to you with her uterus in the state just described will, in addition

to a host of other subjective and objective symptoms, most probably complain of the too frequent recurrence of the catamenial period, of the excessive discharge at that time, and in the intercatamenial period of persistent and distressing leucorrhœal flow. Now in such a case as this I should commence by administering two drops of the liquor arsenicalis, or one granule of arsenious acid, three times a day, at mealtimes. This dose I should continue for a fortnight. If at the end of that time no conjunctival irritation had displayed itself, I should increase the dose to four drops of the solution or two of the granules; and then again, after another interval, to six, eight, ten, or even more drops, or granules in proportion, watching the patient, and being guided by her tolerance of the remedy.

"Besides the general effects of arsenic already alluded to, the first result of this treatment will be the lengthening of the intercatamenial period; and it is remarkable how gradually this is sometimes extended, one or two days only being gained at a time. By persisting in the remedy, however, the interval will become greater until it arrives at its normal duration. Occasionally the progress is more rapid, and the proper interval is at once attained. Besides the improvement in this respect, the amount of the discharges will gradually decrease, and in like manner all the other hyperæmic symptoms disappear. I have never found it necessary to administer large doses, and can not remember ever having produced any of the premonitory symptoms of arsenical poisoning beyond that of conjunctival tenderness. I have been obliged, however, to continue the remedy for several months, and have had to recur to its use more than once when the hyperæmic symptoms have reäppeared. In some cases an excessive leucorrhœal discharge has the effect of supplanting the catamenial. In these cases the cure of the former has the result of removing the amenorrhœa. The late Dr. Wright says: 'Arsenic has succeeded in my own practice when a long suc-

cession of other remedies has previously failed to induce or reëstablish menstruation.' If I am asked to explain what is the therapeutical action of arsenic in these cases, I frankly own my ignorance, and admit that, like many other medicines, I use it empirically, and patiently await the explanation which science may some day be able to give. Theories are not, however, wanting. Dr. Hunt, judging from the fact that inflammation of the genital organs has been produced in some cases of arsenical poisoning, infers that the action of arsenic in curing uterine disorders 'may be explained by its action on the mucous membrane of the uterus as a stimulant.' Dr. James Begbie, believing the uterus to be affected in its functions and structure through rheumatic and other morbid conditions of the blood, says that 'the efficacy of arsenic resides in its powerful alterative effects upon the blood.' Another theory, which, without denying the possible truth of the two foregoing, I feel most inclined to adopt, is that the arsenic, circulating with the blood, acts upon the vaso-motor nerves of the capillaries as a stimulant and tonic, causing them to contract and expel the superabundant blood. But, whatever theory may be correct, the practical results of the administration of arsenic in menorrhagia and leucorrhœa are most satisfactory; and I shall be glad if these few remarks have the effect of once more drawing the attention of the profession to a safe and potent remedy, by the means of which two of the most common and distressing complaints from which women suffer may be brought under subjection and finally cured."

Treatment of the Sequelæ of Heart Disease.—Dr. Fothergill, in an admirable paper on the treatment of heart disease, published in the Edinburgh Medical Journal, thus speaks of the management of the sequelæ of cardiac trouble:

"When from inability in the center of the circulation we have decidedly venous congestion, and from it again a sort of re-balancing of the system arterial and venous, we have

the different viscera in a state of asthenic congestion, a condition unfavorable to the performances of function. Thus we have gastric catarrh, congestion of the liver, diminished flow of urine, and tendency to disease of the kidney as the consequence and not the cause of heart disease; in females uterine discharges, menorrhagic or leucorrhœal. So we have effusion through the lining membrane of the air-passages, and a flow of fluid, chronic bronchitis or bronchorrhœa, œdema of the lungs, etc., and finally general anasarca. Now it is obvious that where we hope not only to relieve matters, but to inaugurate improvement, we must relieve the viscera from a condition unfavorable to improved nutrition. For this purpose we can use purgatives, diuretics, diaphoretics, and even expectorants; all agents affecting the secretory and excretory power of the different organs.

"Purgatives, and more especially drastic cathartics, have been long resorted to with the intention of calling out the action of the bowel; and the different effect of two drachms of pulv. jalap. co., with a grain of gamboge in it, on a patient with advanced heart disease to its effect on a healthy person speaks volumes. The latter would feel decidedly depressed, but the sufferer from heart disease feels enlivened, sprightly, and altogether improved. Four or five copious watery evacuations have relieved his venous congestion, relieved his distended right ventricle, and improved his pulse, while the relief to the cerebral congestion manifests itself in his improved spirits. This method of acting on the viscera in the congestion of heart failure is deservedly a favorite one; and for the purpose of exciting free catharsis the usual means are pulv. jalap. co., pulv. scam. co., elaterium, and gamboge. Gamboge rubbed up with bitartrate of potash and black pepper, or other carminative, is a capital cathartic. All may have to be used in turn, as one form soon loses its efficacy. Chronic diarrhea is not in this condition to be arrested, except by action on the skin, unless it is clearly threatening the

patient's existence. It is a natural drain, as much as eczema in hydrops. Purgatives are often thought to have a diuretic effect in heart affections. This is the impression of experience as a fact. Really, the improvement in the circulation s followed by freer circulation through the kidneys and better arterial tension, and consequently there is better diuresis of water.

"Diuretics have not only always been resorted to in the treatment of dropsy, which was until recently regarded as a disease *per se* and not a sequel, but the improved or unaltered flow of urine has been adopted as a sort of test of the efficacy of the remedial measures resorted to. Long before the experiments of Paff or Winogradoff, Hanfield Jones, and Brunton on arterial tension, popular observation had learned that an increased flow of urine indicated an improvement in the patient's immediate condition in dropsy; and it is therefore in the agents classed as diuretics that we find digitalis, squill, belladonna, etc., which we now know exercise their diuretic action by virtue of the increased arterial tension, the result of more perfect ventricular contraction. The water excretion by the kidneys is a question of hydraulics—a purely mechanical result of the pressure of the blood on the thin-walled glomeruli of the Malpighian bodies. When the arterial blood is driven in but feebly, and the venous is almost stagnant, we find the bulk of urine very low indeed; but its sp. gr. may be very high, for the bulk of urine and the elimination of solid excreta by the renal secreting cells bear no necessary relation to each other. No doubt too certain other agents act as diuretics, as juniper, turpentine, potash nitrate, nitric ether, etc., by their being direct stimulants to the kidneys, and thus inducing an increased flow of blood to these organs. But it is in the first division we find our agents which are the best diuretics in heart failure, and what position scoparium should hold it is difficult to say from want of observation and experiments, but it will probably be found among the first named. The other

class of diuretics, as colchicum, cantharadine, and buchu, etc., which increase the amount of solids without effecting the bulk of urine, are not to be regarded as diuretics in the treatment of heart failure. Stimulants are diuretics insomuch as they increase the completeness of the ventricular contractions and improve arterial tension.

"Diaphoretics are not yet sufficiently adopted as a means of affording relief in dropsy and the sequelæ of heart failure; but it is not only a very effectual, but in my experience so far a perfectly safe way of increasing water elimination, especially when the heart failure is accompanied by renal disease. The sitz-bath is a good form, or any bath which permits the patient to breathe freely. Turkish baths are regarded as not very safe. Another plan, employed by the late Sir James Simpson, has been so useful that it can not be omitted, and that is to fill six or eight lemonade bottles with boiling water, cork them well, and draw over each a woolen stocking wrung out of hot water, then pack them round the patient in bed, who in fifteen minutes or so commences to sweat profusely. They can be continued for an hour, or repeated when necessary. This plan can be resorted to with the poorest patients, and when a patient of any class is confined to bed. In obstinate cases, where the skin will not be induced to relax by hot baths, cold packing has been resorted to in order to paralyze the minute vessels of the skin, and thus produce dilatation of them in cases of chronic kidney disease; but I am not acquainted with the details as to whether cases with distinct heart failure were so treated or not.

"Dropsy is not only a great cause of suffering to a patient with heart disease, but is regarded by non-professional people as indicating great danger to existence. It is no doubt a sign of failing power of serious import; still its occurrence often gives temporary relief. When the distended venous system is relieved by a sudden general œdema, great and immediate relief is experienced, and that may be utilized to improve

matters and to induce reäbsorption. But usually dropsy commences insidiously, retreats for a longer or shorter time under proper treatment, but usually it is not long in returning, and is more persistent on each reäppearance. If during the interval the patient has been under good treatment, and yet in spite of it it returns, it is a prognostic sign of the very worst import. No worse sign can exist, and its reäppearance calls for the most energetic treatment. Sometimes œdema is very capricious in its seat, and flits about in a very curious to-and-fro manner. In one well-remembered case, where the lesion was tricuspid, the oscillations from legs to lungs and back again were very marked. If the patient was found with a less agonized countenance, his legs were tremendously swollen; when he was gasping for breath his legs were fallen. Dropsy, as a sequel to heart disease, is amenable, more or less, to the measures cited above, in addition to which is the question of puncture. Nature oftentimes establishes a drain of her own, not always with good effect. Puncture, or incision, is, in my personal experience, in most cases worse than useless—only adds a wet bed to the patient's sufferings. One case only can I recall where the benefit was decided and unequivocal. Others have had a less unpleasant experience; but it is in dropsy from heart and kidney disease combined that the benefit of puncture or incision is chiefly seen. In simple heart failure it is a hazardous proceeding, and sometimes the carbonic-acid poisoning, the irregularity of pulse, dyspnœa, etc., commence to increase on the establishment of the drain. In one case this occurred when the serum spirted out of the needle-holes in an arterial jet, and the bed was soon in a perfect puddle, and could not be kept otherwise during the six and thirty hours the patient survived. Still the puncture, or incision, is among our armamentaria, and does frequently afford more or less relief; but the incisions may become troublesome sores, or even slough."

Notes and Queries.

VACCINATION. — Professor E. R. Palmer has already laid our readers under obligations by an elaborate article on this subject. He now sends the following:

"The present epidemic of small-pox, which has during the last twelve months shown vigorous life in most of our large cities, is enough to convince every thinking man that there are radical defects somewhere in our present system of protection against this terrible plague. It has been frequently remarked that the subject of vaccination has been so exhausted by essayists that nothing new can be said of it. Without questioning the truth of this oft-repeated assertion, the facts stare us in the face that small-pox, as a remorseless foe to life, has by no means been vanquished; but that, like long-slumbering Vesuvius, it now manifests a renewed vigor that is truly alarming. We can not doubt that in the cow-pox we possess a specific preventive. Indeed, we know it as a demonstrable fact; and yet we are bound in the same breath to acknowledge that the profession, armed with such power, has sadly failed in its efforts at the eradication of the disease in question.

"It behooves us to disturb the dust that has settled upon the vaccination question, not so much perhaps in the hope of eliciting new truths as in reäwakening interest in imperfect old ones. The truths of the Gospel are centuries old, and yet necessity demands their constant and in many instances vehement repetition. Men are prone to forget and to grow careless about topics that cease to be debatable; and if we, in this imperfect yet wide-awake age, are to leave anything

untouched because our fathers handed us in it what they deemed a finished work, the dust that settles upon it will soon and fitly be its burial-shroud.

"In reference then to the defects of vaccination, what are they, and how are they to be remedied? The points to be examined in this article may be arranged under the three following heads: the virus, the vaccinated, and the unvaccinated.

"I am convinced that in a vast number of cases, perhaps the majority, the virus which we are using is next thing to worthless. It has been settled that frequent recurrence to the cow is *not* necessary; and even, according to Trousseau, that weakened virus can by judicious management in its use be reëndowed with pristine vigor. The fault is not in the want of fresh supplies from the cow, but in culpable carelessness on the part of practitioners, who seem to forget that vaccination once imperfectly done can not be remedied by any means in their power, but that its very imperfection *insures against protection*, and thus actually predisposes to the disease itself.

"When the average physician is called upon to vaccinate one of his charge he starts out in quest of virus. In the course of an hour's ride about the city, and to the offices of his various professional friends, he probably finds one who is ready to supply him. A piece of folded prescription-paper is opened disclosing a scrap of crust, a pocket-knife cuts it in half, a ready "O yes" is given to the stereotyped question, "Is it fresh?" Another piece of prescription-paper is called into requisition, the respective little packages are dropped into prescription-books, the books are returned to the accustomed breast-pocket receptacle, and our average practitioner is supplied. This detail may seem minute irrelevancy, while in reality it touches several of the more common causes of vitiation of virus and resulting imperfect protection.

"No two things are more fatal to the proper vigor of virus

than animal heat and the 'stir-about' which we call atmosphere. I vaccinated last spring a vigorous child with pure, fresh virus. The various phases of a typical vaccination were presented to perfection. At the twenty-first day two magnificent crusts seemed ready to drop off. I gave instructions for their preservation, and left the house expecting to receive them the next day. Several days passed, and not hearing from them I called and found them still adherent. I yielded to parental solicitation and let them alone. In about a week's time they separated, and the same day I vaccinated five healthy babies with portions of one of them, using my material lavishly. The next day I put some of the same virus into still another child. Of the first five not one "took," while in the other and more unfortunate case I got one imperfect vesicle out of three insertions. The crusts had been held mechanically to the child's arm after a cessation of all vital connection; and the warmth of the child's body, together with atmospheric contact, had effectually eradicated their protective virtues.

"The following are perhaps proper suggestions under this heading: use eight-day lymph if possible; never carry virus about your person, or use that which others have thus carried; be very careful as to the source of your virus, not from the foolish fear of transmitting disease, but because of the danger of *insuring your patient against protection;* select the virus of vigorous children, from the reasonable hope that it partakes of their vigor; avoid, if possible, obtaining your supply second-hand; if this be necessary, reject all that has not been carefully protected by something more efficient than a piece of prescription-paper; and finally, in this connection, strive, if of an inventive turn, to discover some reliable way for preserving lymph or crust. Glycerine has proven a failure. What next? The best we can do at present is to wrap at once in tin-foil and imbed this in wax, placing the whole in a cool place. Virus thus packed in midwinter will retain its vigor a long time until once opened.

"Of the vaccinated I have but a few words to write. That the best protection is not a life-time warrant of immunity I am more and more convinced. How often the body changes or how often protection runs out I am still unprepared to assert; but the harmlessness of vaccination, the frequency of its taking, and the prevalence of modified small-pox, all demonstrate to my mind the soundness of this now rapidly prevailing practice.

"It has been said that the wide-spread impress of vaccination upon the enlightened portion of the human family has resulted in a decrease in the violence of variola in the unvaccinated. Such is not the testimony of the present epidemic. Variola, both true and modified, has never, in proportion to the number of cases, been more uniformly violent or oftener fatal. The deaths from this cause have during the last summer vied in number with those of that scourge of infancy, cholera infantum. Of course nearly all the deaths were among the unvaccinated. Ignorance, prejudice, carelessness, and want of confidence together have many representatives in our midst. When asked why vaccination is not made compulsory, we can only reply that such a procedure is not consistent with a republican form of government. It would be a wise policy on the part of any political party to put a compulsory vaccination plank into their presidential platform. Such a law would certainly save many of a certain class of voters who, out of sheer gratitude, would assuredly support their benefactors. Seriously speaking, we need a compulsory vaccination law; and the sooner republicanism enlarges her borders sufficiently to issue such an edict the better will it be for those who look to their government for protection of life and property.

"The last obstacle mentioned is a growing one—want of confidence. For it we alone are responsible, and it is our duty to see to it that vaccination fully regains the confidence it certainly merits; and to bring this about we must exert the

greatest care and watchfulness, ever remembering that by our act when vaccinating we then and there decide our patient's future chances of immunity.

THE YOUNG DOCTOR.—The Poet at the Breakfast Table draws the following striking picture in the Atlantic Monthly for March:

"The young doctor has a very small office and a very large sign, with a transparency at night big enough for an oyster-shop. These young doctors are particularly strong, as I understand, on what they call *diagnosis*—an excellent branch of the healing art, full of satisfaction to the curious practitioner who likes to give the right Latin name to one's complaint; not quite so satisfactory to the patient, as it is not so very much pleasanter to be bitten by a dog with a collar round his neck, telling you that he is called *Snap* or *Teaser*, than by a dog without a collar. Sometimes, in fact, one would a little rather not know the exact name of his complaint, as if he does he is pretty sure to look it out in a medical dictionary; and then if he reads, *This terrible disease is attended with vast suffering, and is inevitably mortal*, or any such statement, it is apt to affect him unpleasantly.

"I confess to a little shakiness when I knocked at Dr. Benjamin's office door. 'Come in!' exclaimed Dr. B. F. in tones that sounded ominous and sepulchral; and I went in. I do n't believe the chambers of the inquisition ever presented a more alarming array of implements for extracting a confession than our young doctor's office did of instruments to make nature tell what was the matter with a poor body. There were ophthalmoscopes and rhinoscopes and otoscopes and laryngoscopes and stethoscopes, and thermometers and spirometers and dynamometers and sphygmometers and plexiimeters, and probes and probangs, and all sorts of frightful inquisitive exploring contrivances; and scales to weigh you in, and tests and balances and pumps and electro-magnets

and magneto-electric machines; in short, apparatus for doing everything but turn you inside out.

"Dr. Benjamin set me down before his one window, and began looking at me with such a superhuman air of sagacity that I felt like one of those open-breasted clocks which make no secret of their inside arrangements, and almost thought he could see through me as one sees through a shrimp or jelly-fish. First he looked at the place inculpated, which had a sort of greenish-brown color, with his naked eyes, with much corrugation of forehead and fearful concentration of attention, then through a pocket-glass which he carried. Then he drew a space for a perspective view. Then he made me put out my tongue and laid a slip of blue paper on it, which turned red and scared me a little. Next he took my wrist; but instead of counting my pulse in the old-fashioned way, he fastened a machine to it that marked all the beats on a sheet of paper—for all the world like a scale of the heights of mountains, say from Mount Tom up to Chimborazo, and then down again and up again, and so on. In the mean time he asked me all sorts of questions about myself and all my relatives, whether we had been subject to this and that malady, until I felt as if we must some of us have had more or less of them, and could not feel quite sure whether elephantiasis and beriberi and progressive locomotor ataxy did not run in the family."